

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

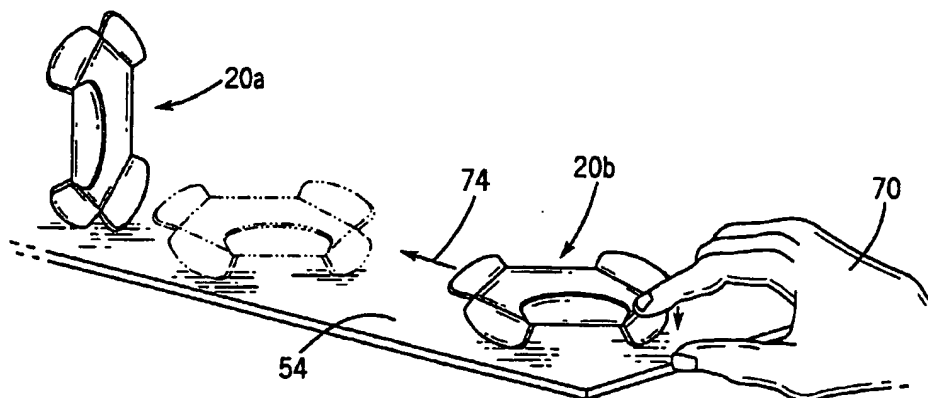
(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
10 January 2002 (10.01.2002)

PCT

(10) International Publication Number  
WO 02/02199 A1

- (51) International Patent Classification<sup>7</sup>: A63H 3/24 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (21) International Application Number: PCT/US01/18322
- (22) International Filing Date: 6 June 2001 (06.06.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
09/609,781 5 July 2000 (05.07.2000) US
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- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: JUMPING AND SLIDING FLAT-PRINTED PROMOTIONAL TOY



(57) Abstract: A low cost high volume flat-printed promotional toy (20) is provided by a plastic disc (22) having an inner perimeter (24) and an outer perimeter (26). The inner perimeter extends around a flat central area (28). The outer perimeter is spaced outwardly of the inner perimeter by a plurality of flaps (30, 32, 34, 36, 38, 40) joined to the flat central area at the respective living hinge bend lines (42, 44, 46, 48, 50, 52) along the inner perimeter. The disc has a first condition (Figs. 1, 2) with the flat central area and the flaps all coplanar and defining a two-dimensional object facilitating printing. The disc has a second condition with the flaps alternately partially folded in opposite directions about respective bend lines to provide a first set of upwardly bent upflaps (30, 34, 38) and a second set of downwardly bent downflaps (32, 36, 40) extending between the inner and outer perimeters.

## JUMPING AND SLIDING FLAT-PRINTED PROMOTIONAL TOY

### BACKGROUND AND SUMMARY OF THE INVENTION

The invention relates to jumping and sliding toys, and more particularly to promotional toys included as prizes in packages of food.

5           The prior art includes numerous types of jumping and sliding toys set in motion by the tap of a finger of a player. Such toys are typically manufactured by injection molding of plastic, and some imitate the shape of jumping animals such as crickets or frogs. Some of such toys can jump, but not slide. Others only jump forwardly, not vertically, eliminating or reducing the possibility of catching the toy with  
10 the same hand. Because of imitation of shapes such as small animals, the toy has only a single jumping position. Because of the injection molding process and the concurrent need of printing logos and decorations, such toys are relatively expensive in the high volume promotional market. Because of the three-dimensional shape, not only is the printing expensive, but there is also high cost and difficulty in handling, packaging and  
15 storing of high volumes of such types of product.

          The present invention addresses and solves the above-noted problems, and provides a low cost jumping and sliding promotional toy. The toy is provided by a semi-rigid, semi-flexible plastic disc printed flat at low cost, including desired logos, decorations or other graphics. The disc has an outer perimeter, an inner perimeter, and a  
20 central flat area. The outer perimeter is spaced outwardly of the inner perimeter by a plurality of flaps joined to the flat central area at respective living hinge bend lines along the inner perimeter. The disc is printed, handled, packaged, stored and shipped in a flat condition with the flat central area and the flaps all coplanar and defining a two-dimensional object facilitating the noted printing, and minimizing costs of handling,  
25 packaging and storing. In preferred form, the disc is die cut in various symmetrical shapes with cuts extending radially inwardly from the outer perimeter, although other flap formation techniques may be used. The construction allows the consumer to alternately partially fold the flaps in opposite directions about respective bend lines to provide a first set of upwardly bent upflaps and a second set of downwardly bent  
30 downflaps extending between the inner and outer perimeters. A finger tap on an upflap causes an upward flipping motion of the toy, and a finger tap on a downflap causes

horizontal sliding of the toy. The toy may be stood upright and used as a target for another toy. Two toys may be nested with each other.

### BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a top elevation view of a toy constructed in accordance with the invention.

Fig. 2 is a side elevation view of the toy of Fig. 1.

Fig. 3 is a perspective view of the toy of Fig. 1 after flap folding.

Fig. 4 is a perspective view showing an upright position of the toy of Fig. 3.

10 Fig. 5 is a side elevation view of the toy of Fig. 4.

Fig. 6 is an exploded perspective view showing nesting of toys.

Fig. 7 is a sectional view taken along line 7-7 of Fig. 6 showing the assembled nesting condition.

Fig. 8 is a perspective view of a portion of Fig. 7.

15 Fig. 9 is a view like Fig. 3 and illustrates jumping.

Fig. 10 is a view like Fig. 3 and illustrates sliding.

Fig. 11 is similar to Fig. 9 and further illustrates jumping and catching.

Fig. 12 is similar to Figs. 10 and 4 and illustrates a game.

Fig. 13 is a perspective view illustrating a toy known in the prior art.

20 Fig. 14 is a top elevation view of the toy of Fig. 13.

Fig. 15 is a side elevation view of the toy of Fig. 13.

Fig. 16 is an end elevation view of the toy of Fig. 13.

Fig. 17 is a view like Fig. 15 and illustrates sliding.

Fig. 18 is a view like Fig. 15 and illustrates forward jumping.

### 25 DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 shows a toy 20 formed of a printed plastic disc 22 having an inner perimeter 24 and an outer perimeter 26. The inner perimeter extends around a flat central area 28. Outer perimeter 26 is spaced outwardly of inner perimeter 24 by a plurality of flaps 30, 32, 34, 36, 38, 40 joined to flat central area 28 at respective living hinge bend lines 42, 44, 46, 48, 50, 52 along inner perimeter 24. Disc 22 has a first condition as shown in Figs. 1 and 2 with flat central area 28 and flaps 30, 32, 34, 36, 38,

30

40 all coplanar and defining a two-dimensional object, Fig. 2, facilitating the noted printing. Disc 22 has a second condition, Fig. 3, with the flaps alternately partially folded in opposite directions about respective bend lines to provide a first set of upwardly bent upflaps 30, 34, 38 and a second set of downwardly bent downflaps 32, 36, 40 extending between inner and outer perimeters 24 and 26.

Disc 22 in the noted second condition is supportable on a flat horizontal surface 54, Figs. 3, 9, 11, with downflaps 32, 36, 40 engaging surface 54, and flat central area 28 spaced above surface 54. Downflaps 32, 36, 40 are interdigitated with upflaps 30, 34, 38 such that a respective pair of downflaps such as 32 and 40 are spaced by an upflap such as 30 therebetween. Downflaps 32 and 40 engage surface 54 at respective spaced engagement points 56 and 58, Fig. 9, defining a fulcrum line 60 therebetween. Upflap 30 has an outer edge 62 spaced farther outwardly than and above fulcrum line 60 such that a downward tap as shown at arrow 63 by a player's finger 64 on outer edge 62 of upflap 30 causes an upward flipping motion of toy 20 due to the force couple between outer edge 62 and fulcrum line 60. The upward flipping motion is substantially vertically upward as shown at arrow 66, Fig. 9, and rotationally clockwise as shown at arrow 68. The upward flipping motion enables the toy to be caught by the player, Fig. 11, either with the same hand 70 used for downward tapping, or with the other hand 72.

Referring to Fig. 10, a downward tap as shown at arrow 63 by finger 64 of the player on downflap 32 causes a horizontal sliding motion of the toy as shown at arrow 74 along surface 54. Such motion is toward the other two downflaps 36, 40.

Referring to Fig. 1, a plurality of cut lines 80, 82, 84, 86, 88, 90 extend inwardly to the bend lines 42, 44, 46, 48, 50, 52 and define flaps 30, 32, 34, 36, 38, 40 between respective cut lines. Each flap has an outer edge at outer perimeter 26 and a pair of opposite side edges extending inwardly to inner perimeter 24 along and formed by respective cut lines. In the noted first condition, Figs. 1 and 2, the side edges of the flaps engage respective side edges of adjacent flaps along a common single plane, which plane is the face of the page in Fig. 1, and which plane extends into the page in Fig. 2. In the noted second condition, Fig. 3, the side edges of the flaps diverge from respective side edges of adjacent flaps in different directions along different non-parallel lines. For

example, side edge 92 of flap 30 and side edge 94 of flap 32 diverge in different directions along different non-parallel lines.

Each cut line 80, 82, 84, 86, 88, 90 terminates at an inner end at a respective bend line 42, 44, 46, 48, 50, 52. Inner perimeter 24 is defined by the plurality of bend lines connected end-to-end. Each bend line extends between a respective pair of cut lines, e.g., bend line 42 extends between cut lines 80 and 82, bend line 44 extends between cut lines 82 and 84, etc. The junction such as 96 of a respective cut line and bend line defines a divergence point, Fig. 3, from which respective side edges such as 92 and 94 of adjacent flaps diverge in different directions in the noted second condition.

Referring to Figs. 4 and 5, disc 22 in the noted second condition is supportable on horizontal surface 54 with flat central area 28 extending substantially vertically. Flaps 32, 34, 36 engage surface 54. Flaps 32 and 36 are bent in the same direction from flat central area 28, and are spaced by flap 34 therebetween which is bent in the opposite direction from flat central 28. The upright condition as shown in Figs. 4 and 5 may be preferred where it is desired to display or view the graphics on the disc in such orientation. The condition of Figs. 4 and 5 is also suitable for a game, Fig. 12, wherein a first toy 20a is stood upright as a target for a second toy 20b upon horizontal sliding motion of the latter.

Various materials and constructions were attempted in developing toy 22. The preferred material of disc 22 is plastic, preferably selected such that the flaps are re-bendable to different angles relative to flat central area 28. It is preferred that the flaps are bent at a 45° angle relative to flat central area 28 in the noted second condition, as shown at angle 98, Fig. 5. It is preferred that the toy be symmetrical in each of the noted first and second conditions. The radial length of cut lines 80, 82, 84, 86, 88, 90 is preferably less than half the radius of disc 22, and preferably about 1/5 thereof. In the preferred embodiment, disc 22 is polyethylene and has a thickness of about 0.5 mm, a diameter of about 50 mm, a cut line length, i.e., the length of a cut line such as 80, of about 5 mm, and a bend line length, i.e., the length of a bend line such as 42, of about 18 mm. The ratio of the length of the outer perimeter 26 to the length of the inner perimeter 24 should be less than 5, and preferably about 1.5. Other types of cut lines may be used, for example, wherein the side edges of the flaps do not engage each other

in the noted first condition, but rather have a gap therebetween, e.g. a pie-shaped gap, or a gap with rounded flap side edges which diverge away from each other as they extend outwardly. The disc need not be round, and can have other shapes.

Referring to Figs. 6, 7, 8, two or more toys 20c, 20d, 20e may be nested  
5 together in the noted second condition. For example, the flat central area of toy 20d lays flat against the flat central area of toy 20e. The flaps have side edges extending outwardly from respective bend lines. The side edges of the downflaps of toy 20d cross and engage the side edges of the upflaps of toy 20e in interference fit to hold the toys nested together. Depending on the degree of bending of the flaps, additional toys such  
10 as 20c may also be nested.

Figs. 13-18 illustrate prior art, namely a three-dimensional injection molded plastic toy jumping and sliding frog 102. The frog rests on four legs 104, 106, 108, 110 on surface 54. Upon light downward momentary taping by player finger 64 on rear edge 112 of rearwardly extending cantilever tab 114, Fig. 17, the toy frog 102 slides  
15 forwardly as shown at arrow 116. Upon a longer, slower and deeper depression of cantilever tab 114 by finger 64, and release thereof, the frog jumps forwardly at shown at arrow 118, Fig. 18, and flips as shown at arrow 120.

It is recognized that various equivalents, alternatives and modifications are possible within the scope of the appended claims.

## CLAIMS

What is claimed is:

1. A toy comprising a printed plastic disc having an inner perimeter and an outer perimeter, said inner perimeter extending around a flat central area, said outer perimeter spaced outwardly of said inner perimeter by a plurality of flaps joined to said flat central section at respective living hinge bend lines along said inner perimeter.
2. The invention according to claim 1 wherein said disc has a first condition with said flat central area and said flaps all coplanar and defining a two dimensional object facilitating said printing, and a second condition with said flaps alternately partially folded in opposite directions about respective said bend lines to  
5 provide a first set of upwardly bent upflaps and a second set of downwardly bent downflaps extending between said inner and outer perimeters.
3. The invention according to claim 2 wherein said disc in said second condition is supportable on a flat horizontal surface with said downflaps engaging said surface, and said flat central area spaced above said surface, said downflaps being interdigitated with said upflaps such that a respective pair of downflaps are spaced by an  
5 upflap therebetween, said pair of downflaps engaging said surface at respective spaced engagement points defining a fulcrum line therebetween, said upflap having an outer edge spaced farther outwardly than and above said fulcrum line such that a downward tap by a finger of a game player on said outer edge of said upflap causes an upward flipping motion of said game piece due to the force couple to said fulcrum line.
4. The invention according to claim 2 wherein said disc in said second condition is supportable on a flat horizontal surface, with at least three downflaps engaging said surface, and said flat central area spaced above said surface, said downflaps being interdigitated with said upflaps such that a respective pair of downflaps  
5 are spaced by an upflap therebetween, such that a downward tap by a finger of a game player on one of said downflaps causes a horizontal sliding motion of said game piece along said surface toward the other two said downflaps.
5. The invention according to claim 2 comprising a plurality of cut lines extending inwardly to said bend lines and defining said flaps between said cut lines, each flap having an outer edge at said outer perimeter, and a pair of opposite side edges

extending inwardly to said inner perimeter along and formed by respective said cut lines.

6. The invention according to claim 5 wherein said side edges of said flaps engage respective side edges of adjacent flaps along a common single plane in said first condition.

7. The invention according to claim 6 wherein said side edges of said flaps diverge from respective side edges of adjacent flaps in different directions along different nonparallel lines in said second condition.

8. The invention according to claim 5 wherein each said cut line terminates at an inner end at a respective said bend line, said inner perimeter being defined by a plurality of said bend lines connected end-to-end, each bend line extending between a respective pair of cut lines.

9. The invention according to claim 5 wherein the junction of a respective said cut line and bend line defines a divergence point from which respective side edges of adjacent flaps diverge in different directions in said second condition.

10. The invention according to claim 2 wherein said disc in said second condition is supportable on a horizontal surface with said flat central area extending substantially vertically, and three of said flaps engaging said surface, a first and third of said three flaps being bent in the same direction from said flat central area and spaced by the second of said three flaps therebetween and bent in the opposite direction from said flat central area.

11. The invention according to claim 2 comprising a first said toy supported in said second condition on a horizontal surface with said flat central area extending substantially vertically, and three of said flaps engaging said surface, a first and third of said three flaps being bent in the same direction from said flat central area and spaced by the second of said three flaps therebetween and bent in the opposite direction from said flat central area, and a second said toy supported in said second condition on a flat horizontal surface with at least three downflaps engaging said surface, and said flat central area of said second toy spaced above said surface, said downflaps being interdigitated with said upflaps such that a respective pair of downflaps are spaced by an upflap therebetween, such that a downward tap by a finger of a game player on one of said downflaps causes a horizontal sliding motion of said second toy



along said surface toward the other two of said downflaps, said first toy being a target for said second toy upon said horizontal sliding motion of the latter.

12. The invention according to claim 2 wherein each said flap has an outer edge at said outer perimeter, and a pair of side edges extending inwardly to said inner perimeter, wherein said side edges of said flaps diverge from respective side edges of adjacent flaps in different directions in said second condition.

13. The invention according to claim 12 wherein said inner perimeter is defined by a plurality of said bend lines connected end-to-end, each bend line extending between a respective said pair of side edges.

14. The invention according to claim 2 wherein the ratio of the length of said outer perimeter to the length of said inner perimeter is less than 5.

15. The invention according to claim 14 wherein said ratio is about 1.5.

16. The invention according to claim 2 wherein said flaps are bent at 45° angles relative to said flat central area in said second condition.

17. The invention according to claim 2 wherein the plastic material of said disc is selected such that said flaps are re-bendable to different angles relative to said flat central area.

18. The invention according to claim 2 wherein said plastic is polyethylene.

19. The invention according to claim 2 wherein said toy is symmetrical in each of said first and second conditions.

20. The invention according to claim 2 comprising two said toys nested together in said second condition, with said flat central area of the first toy laying flat against said flat central area of the second toy, said flaps having side edges extending outwardly from respective bend lines, wherein the side edges of the downflaps of the first toy cross and engage the side edges of the upflaps of the second toy in interference fit to hold said toys nested together.

FIG. 1

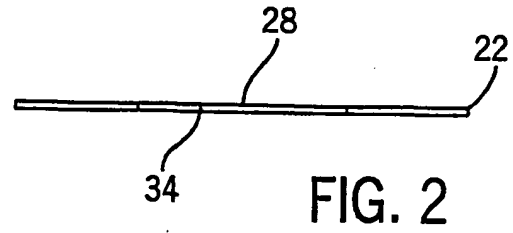
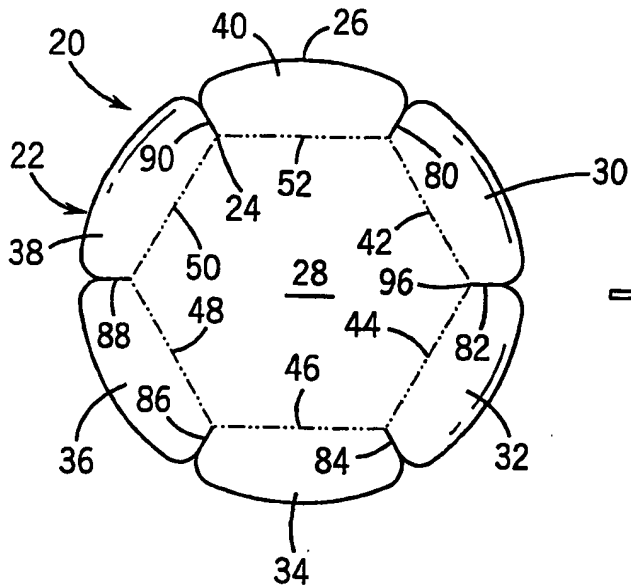


FIG. 2

FIG. 3

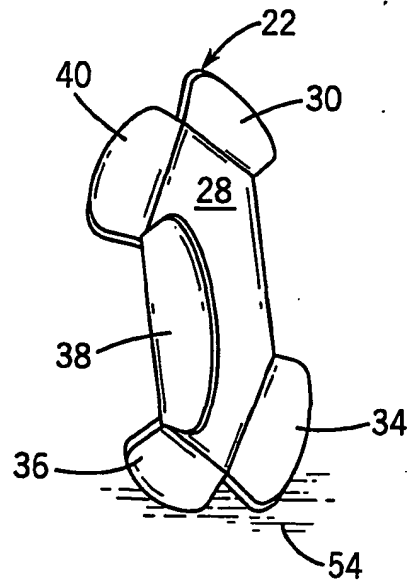
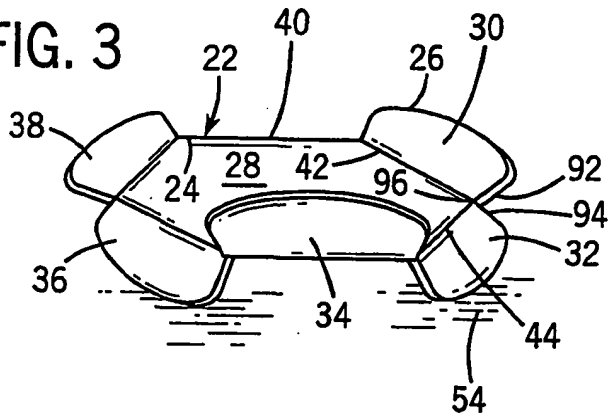


FIG. 4

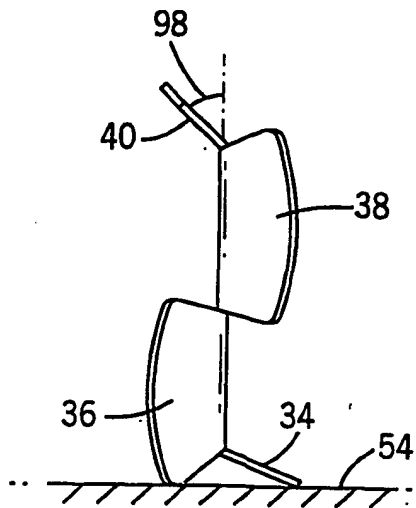


FIG. 5

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FIG. 6

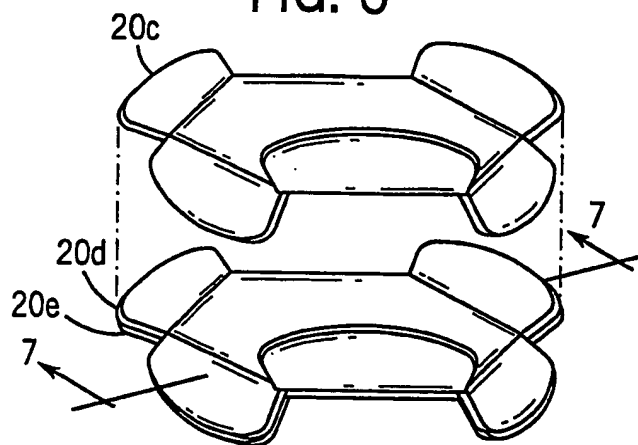


FIG. 7

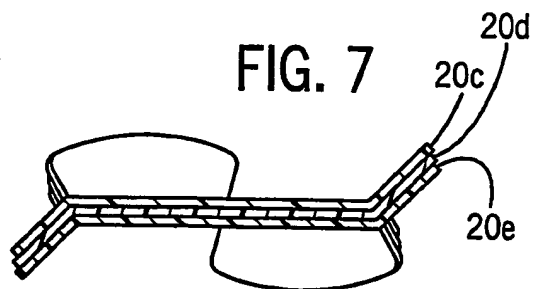


FIG. 8

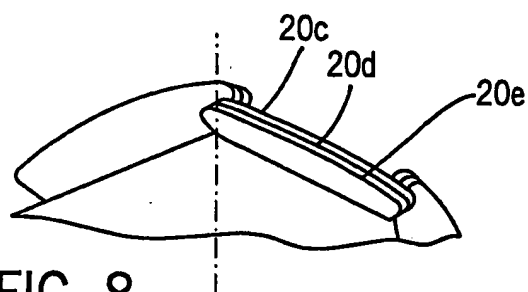


FIG. 9

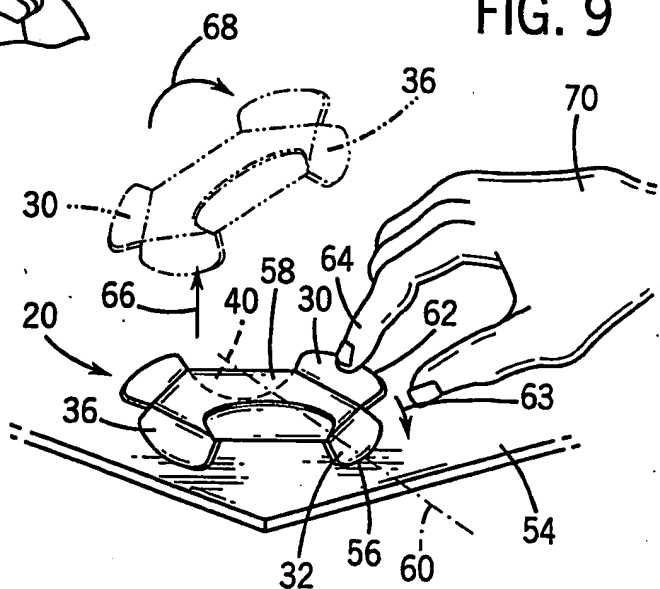
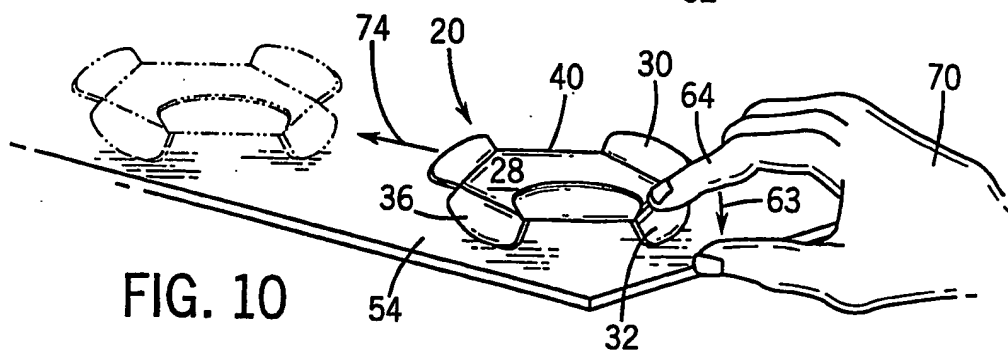


FIG. 10



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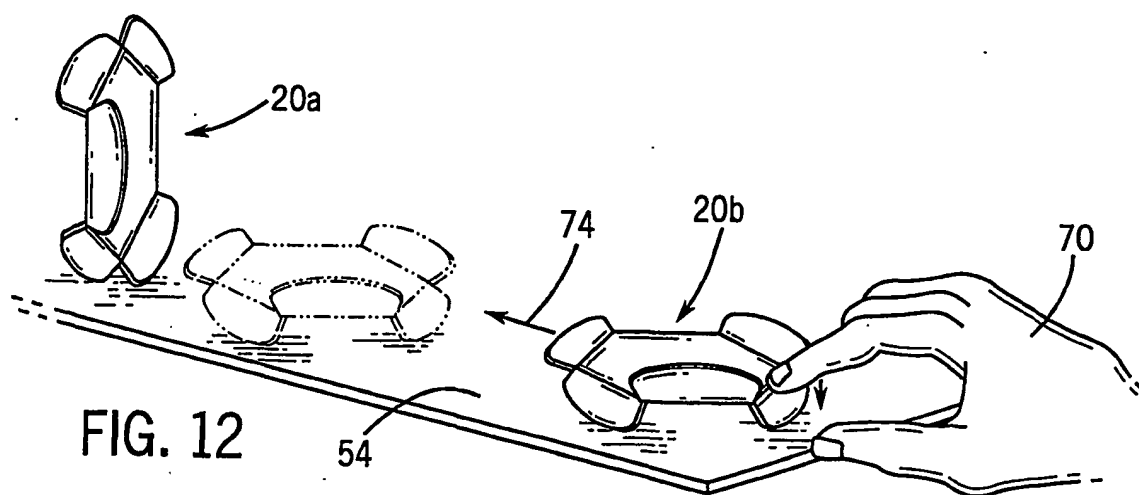
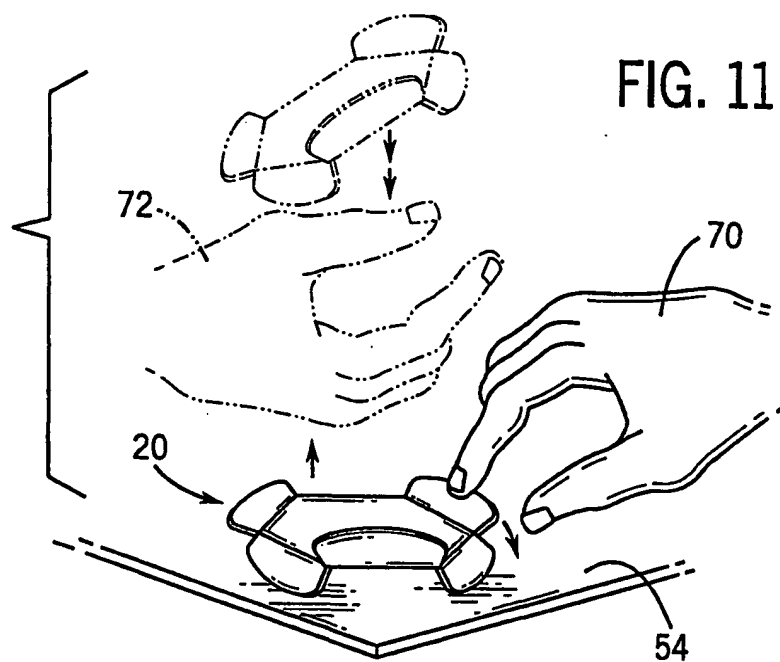


FIG. 13  
PRIOR ART

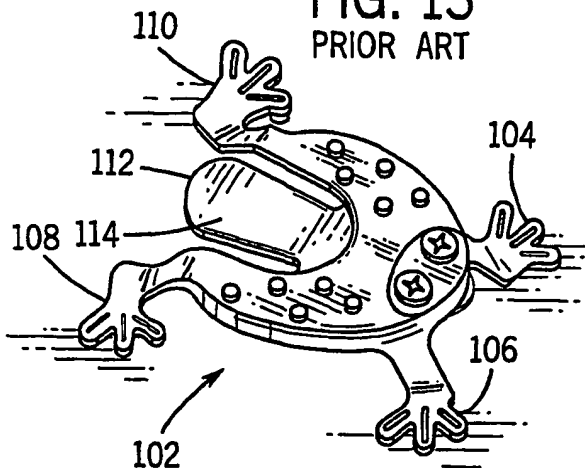


FIG. 14  
PRIOR ART

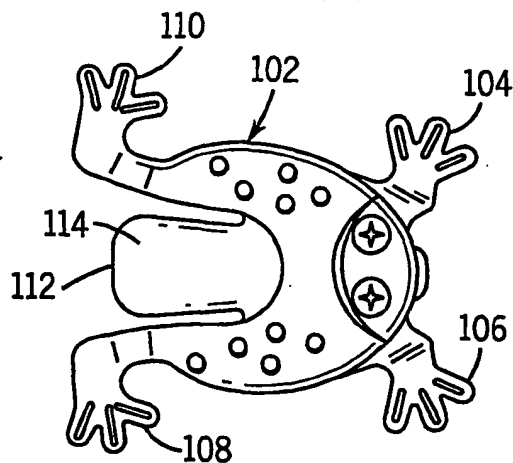


FIG. 15  
PRIOR ART

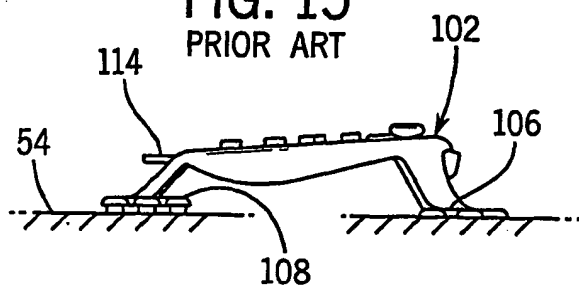


FIG. 16  
PRIOR ART

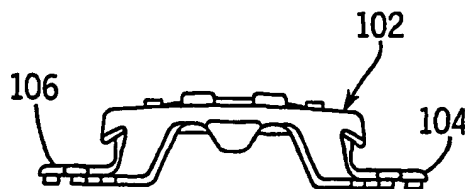


FIG. 17  
PRIOR ART

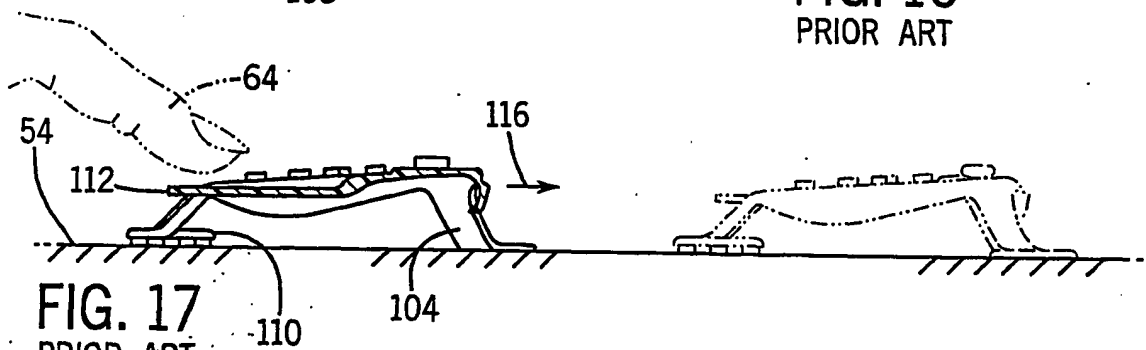
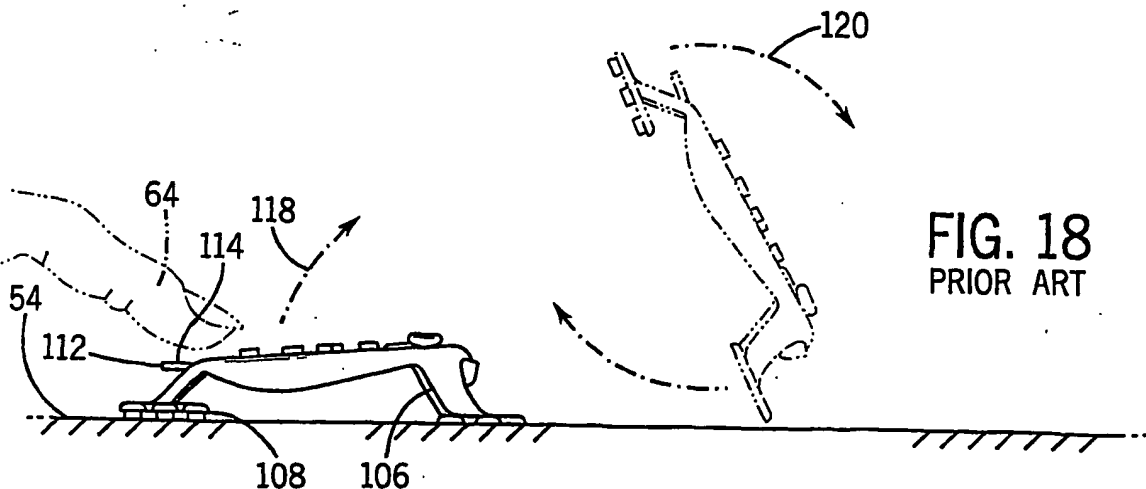


FIG. 18  
PRIOR ART



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US01/18322

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :A63H 3/24

US CL :446/308,309

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 446/308,309,486,36,46; 229/106,107,110

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,669,995 A (Lombard) 02 June 1987, col. 5, lines 3-14.	1-20
A	US 4,802,880 A (Shaw) 07 February 1989, see the Abstract.	1-20
A	US 3,220,142 A (Butterfield) 30 November 1965, see Fig 1.	1-20
X	US 823,934 A (Davidson) 19 June 1906, see Figs 1 and 2.	1-20
A	US 6,089,938 A (Spector) 18 July 2000, see entire Patent.	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search

05 JULY 2001

Date of mailing of the international search report

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